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Coordinated Population Forecast for Deschutes County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2018-2068

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Coordinated Population Forecast

2018

Through

2068

Deschutes County

Urban Growth Boundaries (UGB) & Area Outside UGBs

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Photo Credit: A barn on Johnson Ranch Road. Gary Halvorson, Oregon State Archives.

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Prepared by

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How to Read this Report

This report should be read with reference to the documents listed below—downloadable on the Forecast Program website (http://www.pdx.edu/prc/opfp).

Specifically, the reader should refer to the following documents:

- *Methods and Data for Developing Coordinated Population Forecasts*—Provides a detailed description and discussion of the forecast methods employed. This document also describes the assumptions that feed into these methods and determine the forecast output.
- *Forecast Tables*—Provides complete tables of population forecast numbers by county and all sub-areas within each county for each five-year interval of the forecast period (2018-2068).

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Modified Methodology

The Population Research Center, in consultation with DLCD, has identified cost savings associated with a modified methodology for the latter half of the 50-year forecast period (years 26 to 50). Based on feedback we have received, a 25-year forecast fulfills most requirements for local planning purposes and, in an effort to improve the cost effectiveness of the program; we will place more focus on years 1 through 25. Additionally, the cost savings from this move will allow DLCD to utilize additional resources for local government grants. To clarify, we use forecast methods to produce sub-area and county populations for the first 25 years and a modified projection method for the remaining 25 years. The description of our forecast methodology can be accessed through the forecast program website (www.pdx.edu/prc/opfp), while the summary of our modified projection method is below.

For years 26-50, PRC projects the county population using the annual growth rate from the 24th-25th year. For example, if we forecast a county to grow .4% between the 24th and 25th year of the forecast, we would project the county population thereafter using a .4% AAGR. To allocate the projected county population to its sub-areas, we extrapolate the change in sub-area shares of county population observed in years 1-25 and apply them to the projected county population.

Comparison to Cycle 1 (2015-17)

To keep up to date with local trends and shifting demands, OPFP regularly updates coordinated population forecasts for Oregon's areas. Beyond the modification to our methodology and additional forecast region (from three regions to four), there are differences between the 2018 updated forecast for Deschutes County and the 2015 version. Last round's forecast expected the county to recover from the 2008 recession at a slower rate, but growth has been faster than anticipated. Consequently, we expect faster growth in the early period (2018-25) which results in a higher forecast overall for the 25 year horizon (2018-2043). Specifically, we expect net in-migration of all age groups, but particularly those ages 25-39, to generate strong growth in the future. These county-level differences translate to the sub-areas, though our expectations of future sub-area shares of county population are generally consistent with last round. The full breakdown of differences by county and sub-area is stored here: www.pdx.edu/prc/cycle-2-region-1-documents.

Executive Summary

Historical

Different parts of the county experience different growth patterns. Local trends within UGBs and the area outside them collectively influence population growth rates for the county as a whole.

Deschutes County's total population grew rapidly in the 2000s, with an average annual growth rate of just over 3 percent between 2000 and 2010 (**Figure 1**). During this period, significant growth occurred within the urban growth boundaries. The UGBs of Sisters and La Pine posted the highest average annual growth rates at 7.8 and 6.3 percent, respectively, during the 2000 to 2010 period while areas outside the UGBs experienced an aggregate average annual growth rate of 1.0 percent.

While Deschutes County's positive population growth in the 2000s was largely the result of substantial net in-migration, natural increase (more births than deaths) has accounted for a small, but waning, share of growth. Declining natural increase is largely reflective of the statewide trend of an aging population not only leading to an increase in deaths but also in a smaller proportion of women in their childbearing years. This, along with more women having children at older ages has led to births stagnating in recent years (**Figure 12**). Since 2012, net in-migration has risen dramatically through the economic expansion, while birth rates have continue to decline, leading to strong population growth.

Forecast

Total population in Deschutes County will likely grow at a faster pace in the near-term (2018-2043) compared to the long-term (2043-2068) (**Figure 1**). The tapering of growth rates is largely driven by a growing natural decrease that will cut into population growth from net in-migration. Even so, Deschutes County's total population is forecast to increase by more than 114,000 over the next 25 years (2018-2043) and by more than 245,000 over the entire 50 year forecast period (2018-2068).

Figure 1. Deschutes County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR)

	Historical			Forecast					
	2000	2010	AAGR (2000-2010)	2018	2043	2068	AAGR (2010-2018)	AAGR (2018-2043)	AAGR (2043-2068)
Deschutes County	**115,367**	**157,733**	***3.2%***	**187,621**	**301,999**	**432,930**	***2.1%***	***1.9%***	***0.7%***
Bend	52,163	77,010	*4.0%*	91,373	162,362	255,291	*2.1%*	*2.3%*	*1.8%*
La Pine	899	1,653	*6.3%*	1,833	3,594	5,894	*1.3%*	*2.7%*	*2.0%*
Redmond	15,524	26,508	*5.5%*	29,364	51,625	82,575	*1.2%*	*2.3%*	*1.9%*
Sisters	961	2,038	*7.8%*	2,691	5,169	8,431	*3.4%*	*2.6%*	*2.0%*
Outside UGBs	45,820	50,524	*1.0%*	62,360	79,248	80,739	*2.6%*	*1.0%*	*0.1%*

Sources: U.S. Census Bureau, 2000 and 2010 Censuses; Forecast by Population Research Center (PRC).

Note: For simplicity each UGB is referred to by its primary city's name.

14-Year Population Forecast

In accordance with House Bill 2254, which streamlined the UGB process based on long-term housing and employment needs, **Figure 2** provides a 14-year population forecast (2018-2032) for the County and its sub-areas. Populations at the 14th year of the forecast were interpolated using the average annual growth rate between the 2030-2035 period. The population interpolation template is stored here: www.pdx.edu/prc/cycle-2-region-1-documents.

Figure 2. Deschutes County and Sub-Areas—14-Year Population Forecast

	2018	2032	14-Year Change	AAGR (2018-2032)
Deschutes County	**187,621**	**252,903**	**65,282**	***2.2%***
Bend	91,373	129,400	38,027	*2.5%*
La Pine	1,833	2,806	973	*3.1%*
Redmond	29,364	40,440	11,077	*2.3%*
Sisters	2,691	4,080	1,389	*3.0%*
Outside UGBs	62,360	76,176	13,816	*1.4%*

Note: For simplicity each UGB is referred to by its primary city's name.

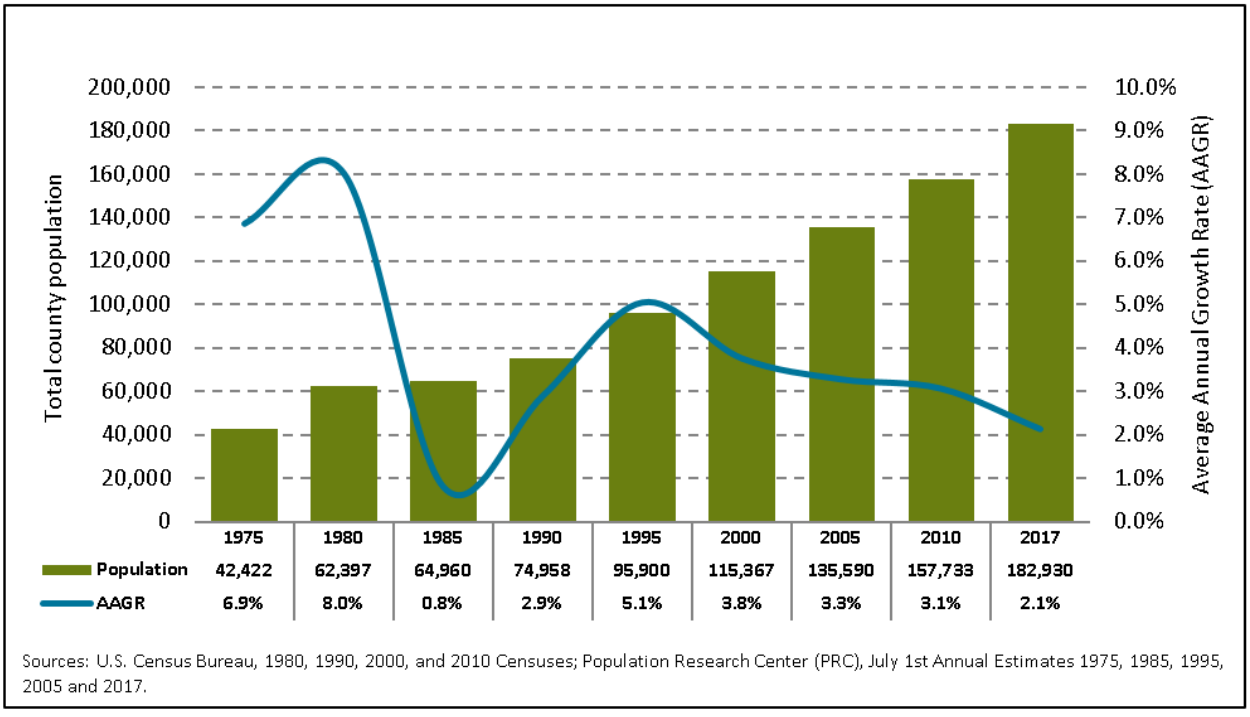
Historical Trends

Different growth patterns occur in different parts of Deschutes County. Each of Deschutes County's sub-areas were examined for any significant demographic characteristics or changes in population or housing growth that might influence their individual forecasts. Factors analyzed include age composition of the population, race and ethnicity, births, deaths, migration, the number of housing units, occupancy rate, and persons per household (PPH). It should be noted that population trends of individual sub-areas often differ from those of the county as a whole. However, population growth rates for the county are collectively influenced by local trends within its sub-areas.

Population

Deschutes County's total population grew from roughly 42,500 in 1975 to about 183,000 in 2017 (**Figure 3**). During this 40-year period, the county experienced the highest growth rates during the late 1970s, which coincided with a period of relative economic prosperity. During the early 1980s challenging economic conditions, both nationally and within the county, led to slow population growth rates. Since the 1990s, Deschutes County has experienced strong population growth, growing 2.7% per year on average between 2000 and 2017.

Figure 3. Deschutes County—Total Population by Five-year Intervals (1975-2017)



Sources: U.S. Census Bureau, 1980, 1990, 2000, and 2010 Censuses; Population Research Center (PRC), July 1st Annual Estimates 1975, 1985, 1995, 2005 and 2017.

During the 2000s, Deschutes County's average annual population growth rate stood at 3.2 percent (**Figure 4**). Each UGB experienced faster growth than the county as a whole, with Sisters, La Pine, and Redmond showing average annual population growth rates above 5 percent. The area outside the UGBs grew at a slower rate than the county as a whole, recording an average annual growth rate of 1 percent.

This slower growth resulted in a decline in the percent share of the population by about 7 percent between 2000 and 2010.

Figure 4. Deschutes County and Sub-areas—Total Population and Average Annual Growth Rate (AAGR) (2000 and 2010)[1]

	2000	2010	AAGR (2000-2010)	Share of County 2000	Share of County 2010	Change (2000-2010)
Deschutes County	*115,367*	*157,733*	*3.2%*	*100.0%*	*100.0%*	*0.0%*
Bend	*52,163*	*77,010*	4.0%	45.2%	48.8%	3.6%
La Pine	*899*	*1,653*	6.3%	0.8%	1.0%	0.3%
Redmond	*15,524*	*26,508*	5.5%	13.5%	16.8%	3.3%
Sisters	*961*	*2,038*	7.8%	0.8%	1.3%	0.5%
Outside UGBs	*45,820*	*50,524*	1.0%	39.7%	32.0%	-7.7%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses.

Note: For simplicity each UGB is referred to by its primary city's name.

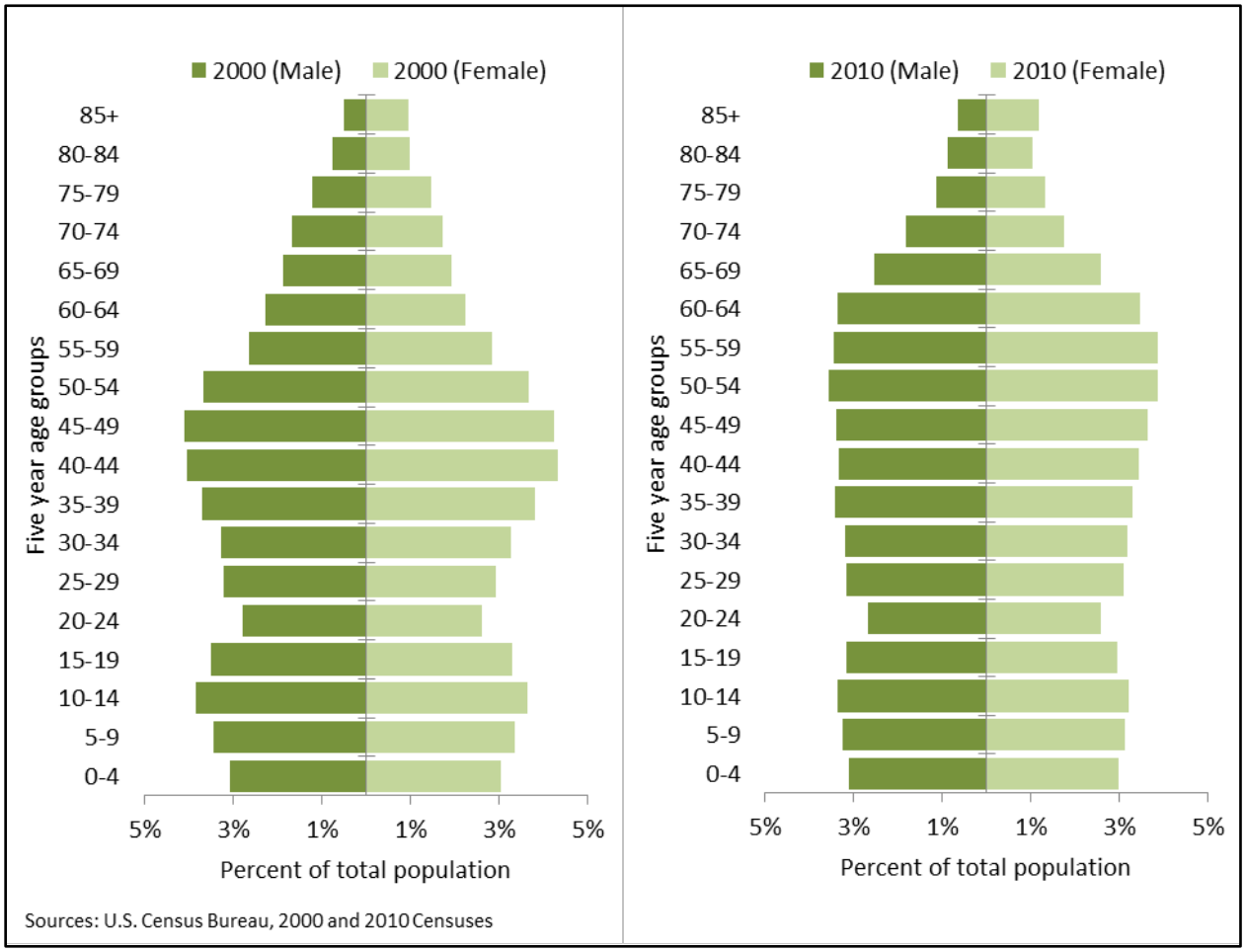
Age Structure of the Population

Similar to most areas across Oregon, Deschutes County's population is aging. An aging population significantly influences the number of deaths but also yields a smaller proportion of women in their childbearing years, which may result in a slowdown or decline in births. The shift in age structure from 2000 to 2010 illustrates this phenomenon (**Figure 5**). Further underscoring the countywide trend in aging, the median age in Deschutes County increased from 38.3 in 2000 to 40.2 in 2010[2].

[1] When considering growth rates and population growth overall, it should be noted that a slowing of growth rates does not necessarily correspond to a slowing of population growth in absolute numbers. For example, if a UGB with a population of 100 grows by another 100 people, it has doubled in population. If it then grows by another 100 people during the next year, its relative growth is half of what it was before even though absolute growth stays the same.

[2] Median age is sourced from the U.S. Census Bureau's 2000 and 2010 Censuses.

Figure 5. Deschutes County—Age Structure of the Population (2000 and 2010)



Race and Ethnicity

While the statewide population is aging, another demographic shift is occurring across Oregon: minority populations are growing as a share of total population. A growing minority population affects both the number of births and average household size. The Hispanic share of total population within Deschutes County increased modestly from 2000 to 2010 (**Figure 6**), while the White, non-Hispanic share deceased over the same time period. This increase in the Hispanic population and other minority populations brings with it several implications for future population change. First, both nationally and at the state level, fertility rates among Hispanic and minority women tend to be higher than among White, non-Hispanic women. However, it is important to note more recent trends show these rates are quickly decreasing. Second, Hispanic and minority households tend to be larger relative to White, non-Hispanic households.

Figure 6. Deschutes County—Hispanic or Latino and Race (2000 and 2010)

Hispanic or Latino and Race	2000		2010		Absolute Change	Relative Change
Total population	115,367	100.0%	157,733	100.0%	42,366	36.7%
Hispanic or Latino	4,304	3.7%	11,718	7.4%	7,414	172.3%
Not Hispanic or Latino	111,063	96.3%	146,015	92.6%	34,952	31.5%
White alone	107,177	92.9%	139,470	88.4%	32,293	30.1%
Black or African American alone	207	0.2%	524	0.3%	317	153.1%
American Indian and Alaska Native alone	875	0.8%	1,197	0.8%	322	36.8%
Asian alone	831	0.7%	1,412	0.9%	581	69.9%
Native Hawaiian and Other Pacific Islander alone	81	0.1%	183	0.1%	102	125.9%
Some Other Race alone	77	0.1%	141	0.1%	64	83.1%
Two or More Races	1,815	1.6%	3,088	2.0%	1,273	70.1%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses.

Births

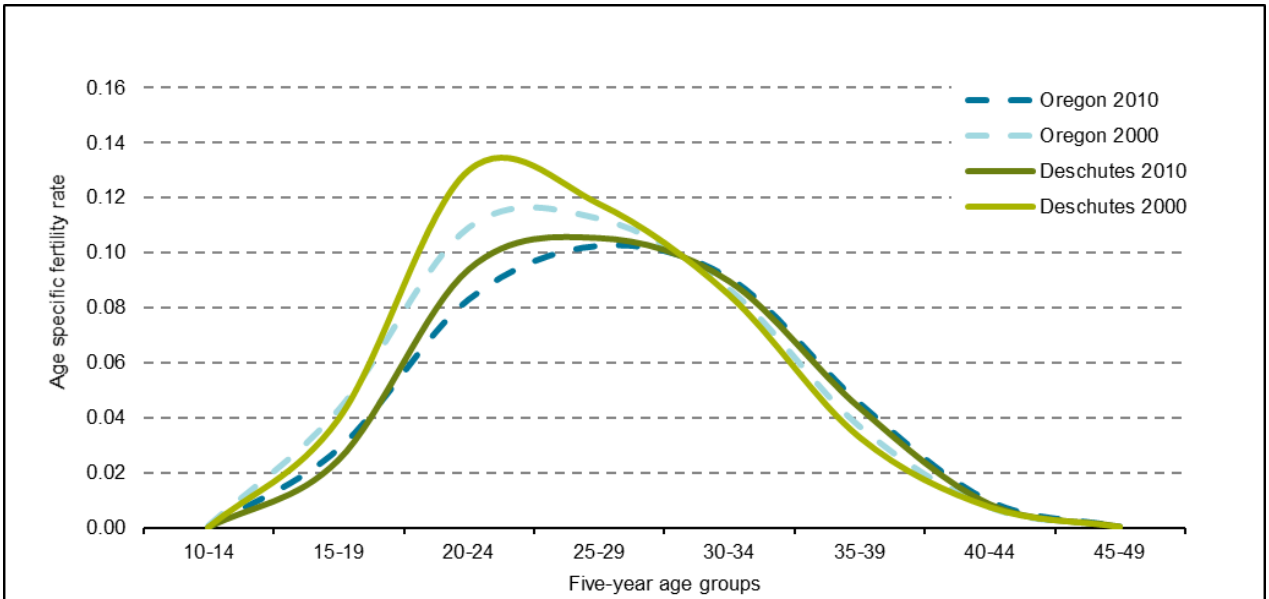
Historic fertility rates for Deschutes County mirror statewide trends in Oregon as a whole. Total fertility rates decreased in Deschutes County and the state from 2000 to 2010 because of delayed child bearing (**Figure 7**). At the same time fertility for women over 30 increased in both Deschutes County and Oregon (**Figure 8**). Total fertility in both the county and the state remain below replacement fertility (2.1), indicating that future cohorts of women in their birth-giving years will shrink overtime without net in-migration.

Figure 7. Deschutes County and Oregon—Total Fertility Rates (2000 and 2010)

Total Fertility Rate (TFR)		
	2000	**2010**
Deschutes County	2.06	1.84
Oregon	1.98	1.81

Sources: U.S. Census Bureau, 2000 and 2010 Censuses. Oregon Health Authority, Center for Health Statistics. Calculations by Population Research Center (PRC).

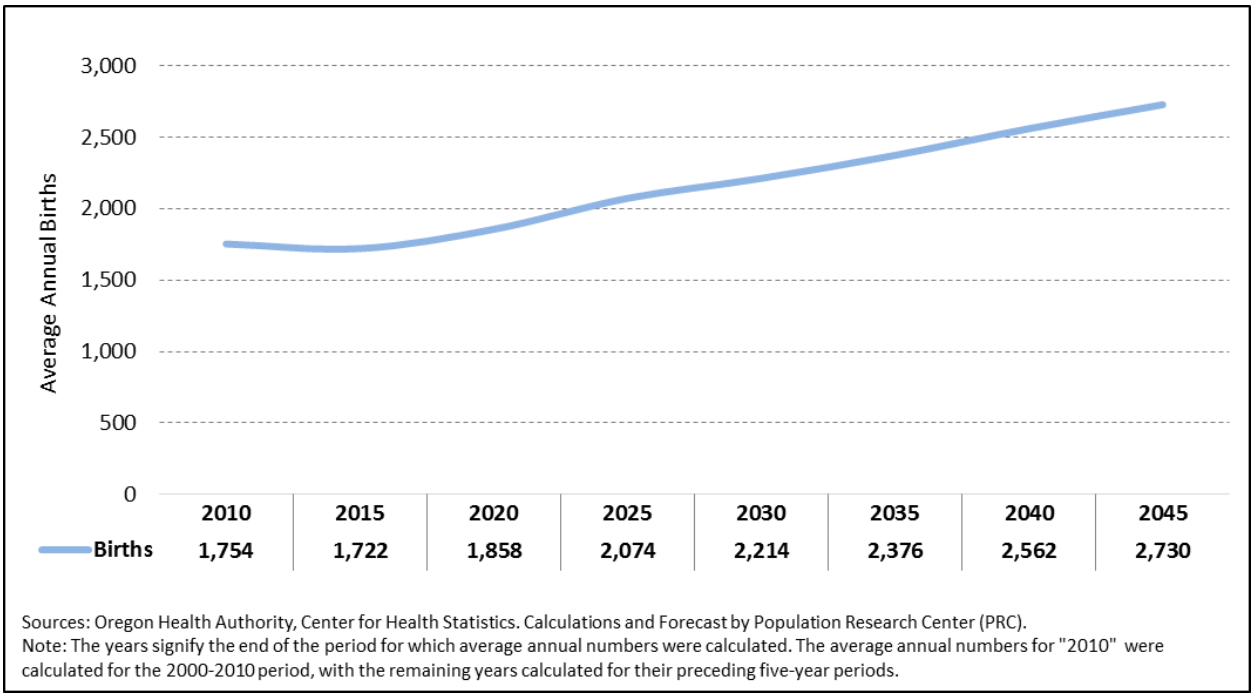
Figure 8. Deschutes County—Age Specific Fertility Rate (2000 and 2010)



Sources: U.S. Census Bureau, 2000 and 2010 Censuses. PRC Estimates. Oregon Health Authority, Center for Health Statistics. Calculations and Forecast by Population Research Center (PRC).

Figure 9 shows the number of historic and forecasted births for the county. The number of annual births from 2010-2015 remained relatively unchanged. Despite declining fertility rates and a shrinking cohort of women in their birth giving years, births are expected to increase steadily throughout the forecast period due to overall county population growth.

Figure 9. Deschutes County—Average Annual Births (2010-2045)

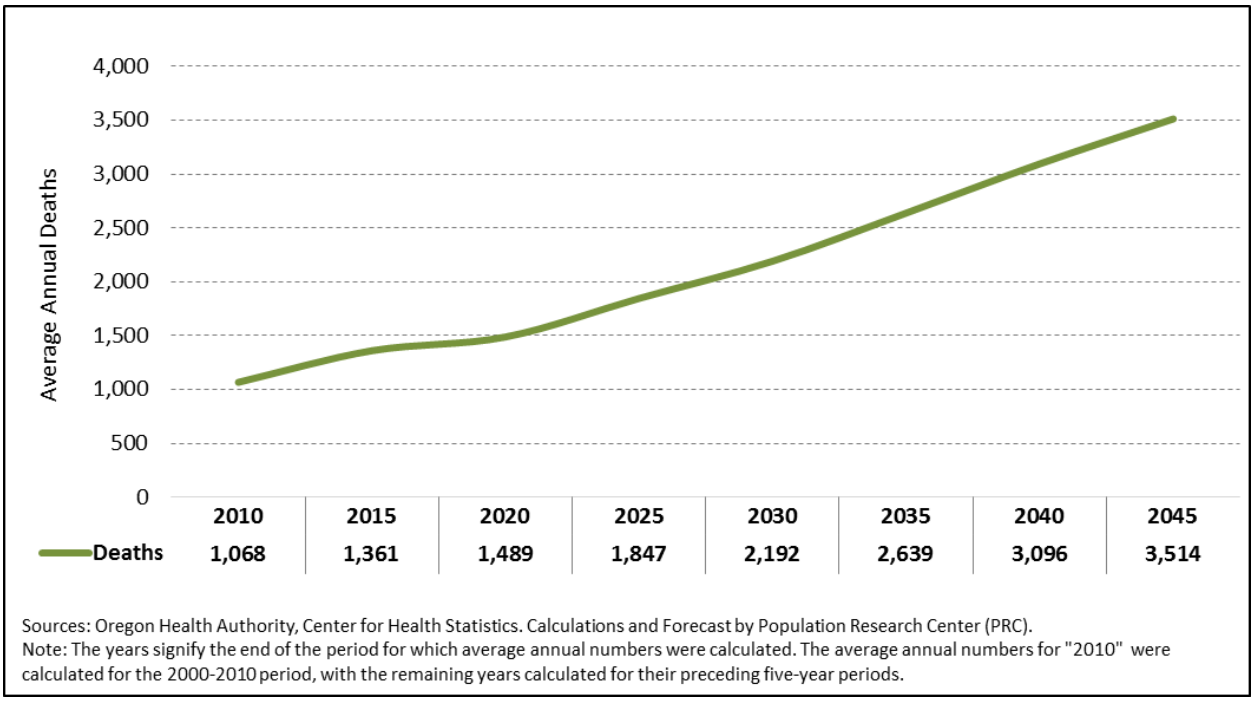


Sources: Oregon Health Authority, Center for Health Statistics. Calculations and Forecast by Population Research Center (PRC).
Note: The years signify the end of the period for which average annual numbers were calculated. The average annual numbers for "2010" were calculated for the 2000-2010 period, with the remaining years calculated for their preceding five-year periods.

Deaths

The population in the county, as a whole, is aging and contrary to the statewide trend, people of all ages are not necessarily living longer[3]. For both Deschutes County and Oregon the survival rates changed little between 2000 and 2010, underscoring the fact that mortality is the most stable component, relative to birth and migration rates, of population change. Total annual deaths increased from 2000-10 and 2010-15 and are expected to increase steadily overtime (**Figure 10**).

Figure 10. Deschutes County—Average Annual Deaths (2010-2045)



Sources: Oregon Health Authority, Center for Health Statistics. Calculations and Forecast by Population Research Center (PRC).
Note: The years signify the end of the period for which average annual numbers were calculated. The average annual numbers for "2010" were calculated for the 2000-2010 period, with the remaining years calculated for their preceding five-year periods.

Migration

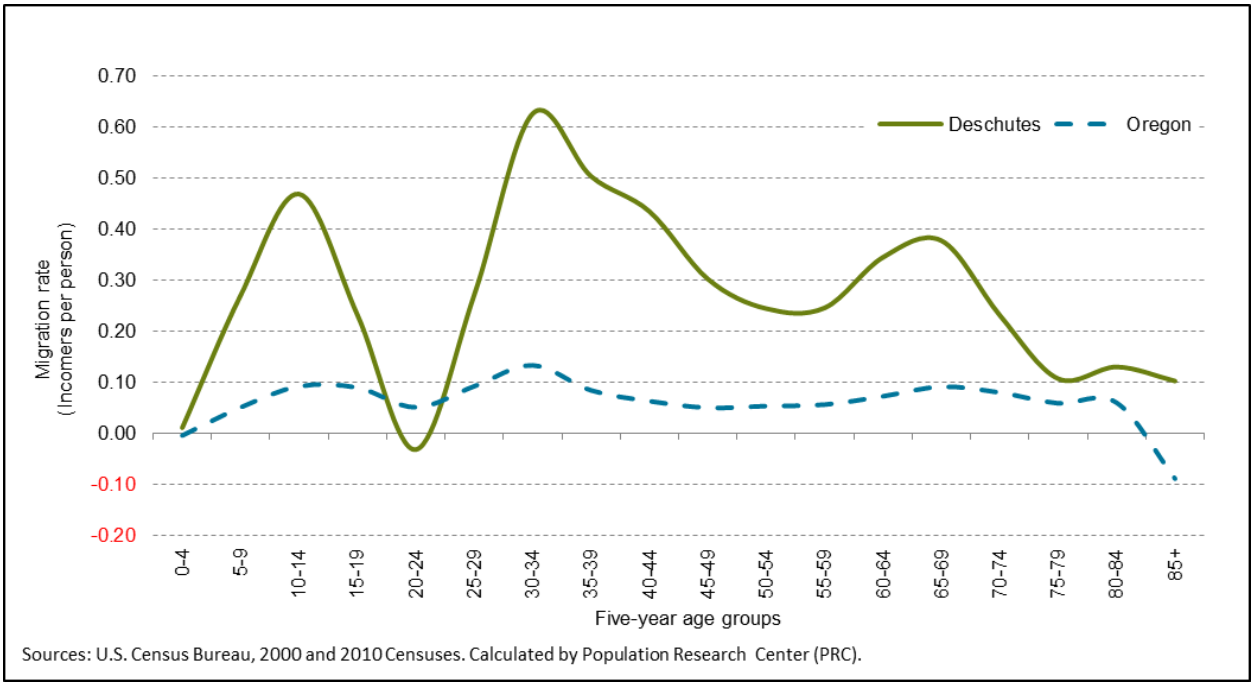
The propensity to migrate is strongly linked to age and stage of life. As such, age-specific migration rates are critically important for assessing these patterns across five-year age cohorts. **Figure 11** shows the historical age-specific migration rates by five-year age group, both for Deschutes County and for Oregon. The migration rate is shown as the number of net migrants per person by age group.

Deschutes County's migration rates do not reflect the patterns of many other Oregon counties, which have experienced an out-migration of young adults (20-29) and an in-migration of older adults and retirees. In contrast, from 2000 to 2010, the county experienced net in-migration from nearly every age

[3] Researchers have found evidence for a widening rural-urban gap in life expectancy. This gap is particularly apparent between race and income groups and may be one explanation for the decline in life expectancy in the 2000s. See the following research article for more information. *Singh, Gopal K., and Mohammad Siahpush. "Widening rural-urban disparities in life expectancy, US, 1969-2009." American Journal of Preventative Medicine 46, no. 2 (2014): e19-e29.*

group, particularly those between the ages 25-39. Individuals in search of higher education, employment opportunities, and housing migrated to the county and brought their children with them.

Figure 11. Deschutes County and Oregon—Age Specific Migration Rates (2000-2010)

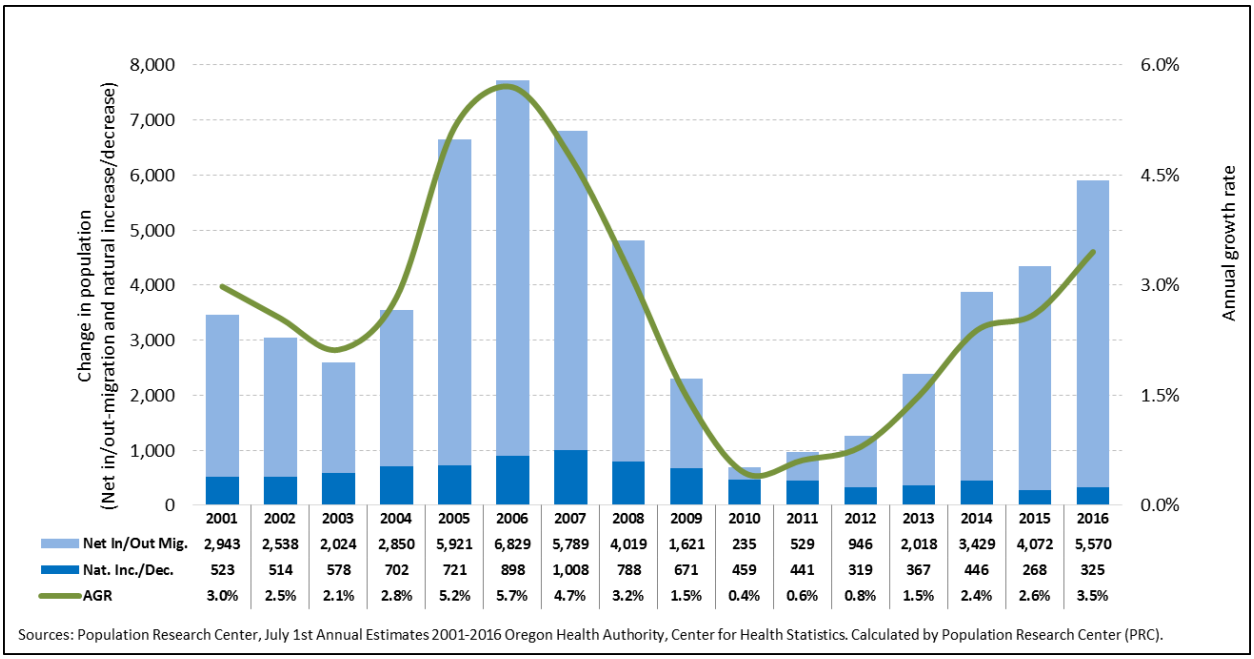


Sources: U.S. Census Bureau, 2000 and 2010 Censuses. Calculated by Population Research Center (PRC).

Historical Trends in Components of Population Change

In summary, Deschutes County's positive population growth during the 2000s was the result of steady natural increase and substantial net in-migration (**Figure 12**). The larger number of births relative to deaths led to natural increase in every year from 2001 to 2016, though it is diminishing. While net in-migration fluctuated dramatically with business cycles during the 00's, the number of in-migrants has been increasing since 2012, leading to strong population growth in recent years.

Figure 12. Deschutes County—Components of Population Change (2001-2016)



Sources: Population Research Center, July 1st Annual Estimates 2001-2016 Oregon Health Authority, Center for Health Statistics. Calculated by Population Research Center (PRC).

Housing and Households

The total number of housing units in Deschutes County increased rapidly during the middle years of this last decade (2000 to 2010), but this growth slowed with the onset of the Great Recession in 2008. Over the entire 2000 to 2010 period, the total number of housing units increased by 47 percent countywide; this was more than 25,500 new housing units (**Figure 13**). Over half of the new housing units (13,620) were built in Bend, accounting for a 4 percent increase of the total housing stock within the UBG. Redmond also captured a large share of countywide housing, and Sisters had the highest growth rate in terms of relative housing growth (8.7 percent). Though the areas outside the UGBs experienced a small growth in housing units (2.3 percent), the countywide share of housing units in areas outside the UGB actually decreased by almost 7 percent.

Housing growth rates may differ from population growth rates because (1) the numbers of total housing units are smaller than the numbers of people; (2) the UGB has experienced changes in the average number of persons per household; or (3) occupancy rates have changed (typically most pronounced in coastal locations with vacation-oriented housing). However, the patterns of population and housing change in Deschutes County are relatively similar.

Figure 13. Deschutes County and Sub-Areas—Total Housing Units (2000 and 2010)

	2000	2010	AAGR (2000-2010)	Share of County 2000	Share of County 2010	Change (2000-2010)
Deschutes County	*54,583*	*80,139*	*3.9%*	*100.0%*	*100.0%*	*0.0%*
Bend	22,565	36,185	4.8%	41.3%	45.2%	3.8%
La Pine	523	942	6.1%	1.0%	1.2%	0.2%
Redmond	6,373	11,092	5.7%	11.7%	13.8%	2.2%
Sisters	483	1,109	8.7%	0.9%	1.4%	0.5%
Outside UGBs	24,639	30,811	2.3%	45.1%	38.4%	-6.7%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses

Note: For simplicity each UGB is referred to by its primary city's name.

Average household size, or PPH, in Deschutes County was 2.4 in 2010, a small decline from 2000 (**Figure 14**). Deschutes County's PPH in 2010 was slightly lower than for Oregon as a whole, which had a PPH of 2.5. PPH varied slightly across the county's UGBs, with all of them falling between 2.3 and 2.6 persons per household. In 2010 the highest PPH was in Redmond with 2.6 and the lowest in La Pine with 2.3. In general, areas with an older or aging population will, more often than not, experience a decline in PPH over time.

Occupancy rates tend to fluctuate more than PPH. This is particularly true in smaller UGBs where fewer housing units allow for larger relative changes in occupancy rates. From 2000 to 2010 the occupancy rate in Deschutes County decreased (**Figure 14**). A drop in occupancy rates was uniform across all sub-areas, with Sisters and Bend experiencing the highest decreases of 6.0 and 5.5 percent, respectively.

Figure 14. Deschutes County and Sub-Areas—Persons per Household (PPH) and Occupancy Rate

	Persons Per Household (PPH)			Occupancy Rate		
	2000	2010	Change 2000-2010	2000	2010	Change 2000-2010
Deschutes County	*2.5*	*2.4*	*-2.5%*	*83.5%*	*80.0%*	*-3.6%*
Bend	2.5	2.4	-4.4%	93.6%	88.1%	-5.5%
La Pine	2.4	2.3	-5.0%	76.7%	74.1%	-2.6%
Redmond	2.2	2.6	20.1%	94.3%	90.7%	-3.6%
Sisters	2.6	2.4	-6.6%	82.4%	76.4%	-6.0%
Outside UGBs	2.4	2.4	1.6%	71.7%	66.9%	-4.8%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses. Calculated by Population Research Center (PRC)

Note: For simplicity each UGB is referred to by its primary city's name.

Assumptions for Future Population Change

Evaluating past demographic trends provides clues about what the future will look like and helps determine assumptions of likely scenarios for population change. Assumptions about fertility, mortality, and migration were developed for Deschutes County's overall population forecast and for each of its larger sub-areas[4]. Population change for smaller sub-areas is determined by the change in the number of total housing units, PPH, occupancy rates, and group quarters population. Assumptions around these components of growth are derived from observations of historical building patterns, current plans for future housing development, and household demographics. Our forecast period is 2018-2068.

Deschutes County's larger sub-areas include Bend and Redmond. Deschutes County's smaller sub-areas include La Pine and Sisters.

Assumptions for the County and Larger Sub-Areas

During the forecast period, the population in Deschutes County is expected to age more quickly during the first half of the forecast period and then remain relatively stable over the forecast horizon. Total fertility rates are expected to decline throughout the forecast period (1.75 in 2015 to 1.60 in 2043), though fertility rates for women under 30 are expected to decline more dramatically. Our assumptions of fertility for the county's larger sub-areas vary and are detailed in Appendix B.

Changes in survival rates are more stable than fertility and migration rates; overall life expectancy is expected to increase slightly over the forecast period. In spite of this trend, Deschutes County's aging population will increase the overall number of deaths throughout the forecast period.

Migration is the most volatile and challenging demographic component to forecast due to the many factors influencing migration patterns. Economic, social, and environmental factors such as employment, educational opportunities, housing availability, family ties, cultural affinity, climate change, and natural amenities occurring both inside and outside the study area can affect both the direction and the volume of migration.

We assume rates will change in line with historical trends unique to Deschutes County. Net in-migration of younger persons and middle-aged individuals will persist throughout the forecast period; countywide average annual net in-migration is expected to increase from 2,240 net in-migrants in 2015 to 5,104 net in-migrants in 2043. Net in-migration is expected to curb the shrinking natural increase and continue to offset the projected natural decrease beginning in 2030-2035. Though these trends will result in a shrinking growth rate, population is forecasted to grow throughout the entire forecast period.

[4] County sub-areas with populations greater than 7,000 in the forecast launch year were forecast using the cohort-component method. County sub-areas with populations less than 7,000 in forecast launch year were forecast using the housing-unit method. See Glossary of Key Terms at the end of this report for a brief description of these methods or refer to the *Methods* document for a more detailed description of these forecasting techniques.

Assumptions for Smaller Sub-Areas

Rates of population growth for the smaller UGBs are determined by corresponding growth in the number of housing units as well as changes in housing occupancy rates and PPH. The change in housing unit growth is much more variable than change in housing occupancy rates or PPH.

Occupancy rates and PPH are assumed to stay relatively stable over the forecast period. Smaller household size is associated with an aging population in Deschutes County and its sub-areas.

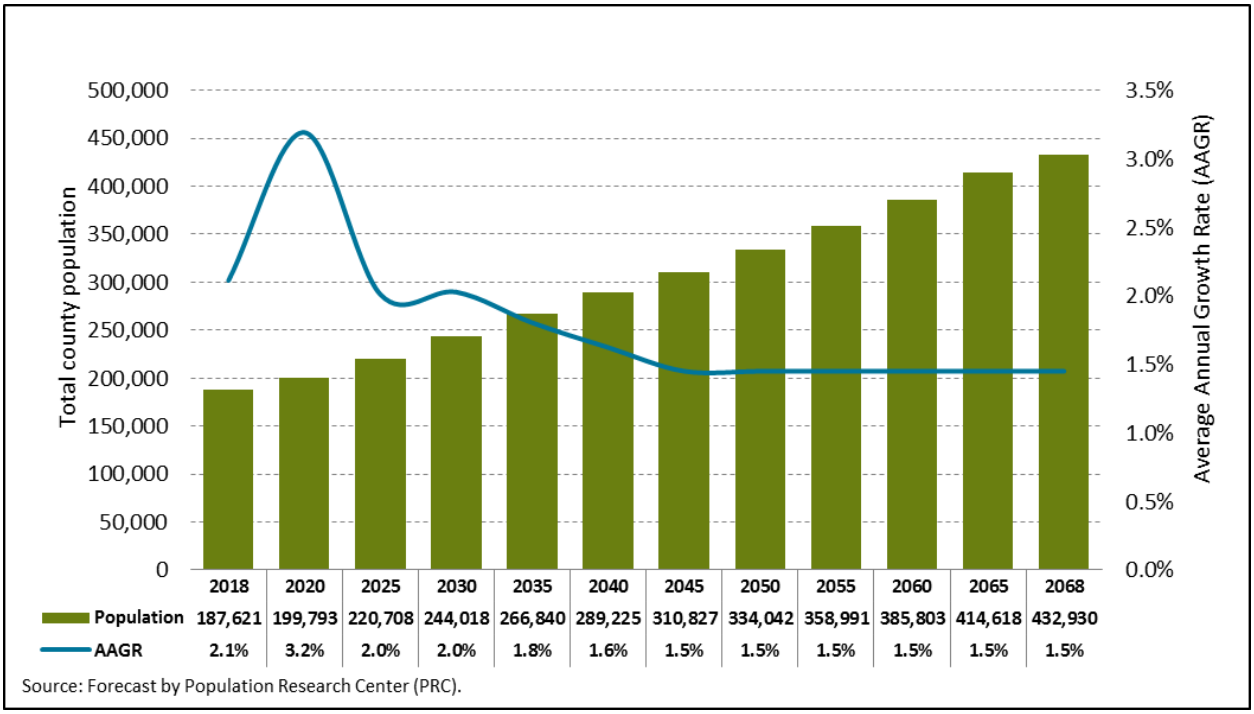
If planned housing units were reported in the surveys, we accounted for them being constructed over the next 5-15 years (or as specified by local officials). Finally, for sub-areas where population growth has been flat or declining, and there is no planned housing construction, we temper population change.

Forecast Trends

Under the most-likely population growth scenario for Deschutes County, countywide and sub-area populations are expected to increase over the forecast period. The countywide population growth rate is forecast to peak in 2025 and then slowly decline throughout the forecast period. A reduction in population growth rates is driven by both (1) an aging population—contributing to steady increase in deaths—as well as (2) net in-migration tapering in the long run to account for uncertainty.

Deschutes County's total population is forecast to grow by 245,308 persons (130.7 percent) from 2018 to 2068, which translates into a total countywide population of 432,930 in 2068 (**Figure 15**). The population is forecast to grow at the highest rate—over 2 percent per year—during the near-term (2018-2030). This anticipated population growth in the near-term is based on two core assumptions: (1) strong net in-migration and housing construction will continue into 2020; (2) net in-migration of retirees will continue. Over 53,800 in-migrants are forecast from 2018-30, leading to a continued population growth.

Figure 15. Deschutes County—Total Forecast Population by Five-year Intervals (2018-2068)



Source: Forecast by Population Research Center (PRC).

Deschutes County's two largest UGBs—Bend and Redmond—are forecast to experience a combined population growth of more than 93,200 from 2018 to 2043 and over 123,800 from 2043 to 2068 (**Figure 16**). Both Bend and Redmond are expected to experience a higher average annual growth rate (2.3 percent) from 2018 to 2043 and a slightly lower rate (1.8 to 1.9 percent) from 2043 to 2068. The majority of the forecasted increase will occur within the Bend UGB, as the population is expected to grow by almost 71,000 from 2018 to 2043 and almost 93,000 from 2043 to 2068. The share of the total

countywide population in Bend is forecast to increase by over 10 percent from 2018 to 2068, and the share of total countywide population in Redmond is forecast to increase by over 3 percent.

Figure 16. Deschutes County and Larger Sub-Areas—Forecast Population and AAGR

	2018	2043	2068	AAGR (2018-2043)	AAGR (2043-2068)	Share of County 2018	Share of County 2043	Share of County 2068
Deschutes County	*187,621*	*301,999*	*432,930*	*1.9%*	*1.5%*	--	--	--
Bend	91,373	162,362	255,291	*2.3%*	*1.8%*	48.7%	53.8%	59.0%
Redmond	29,364	51,625	82,575	*2.3%*	*1.9%*	15.7%	17.1%	19.1%
Outside UGBs	62,360	79,248	80,739	*1.0%*	*0.1%*	33.2%	26.2%	18.6%

Source: Forecast by Population Research Center (PRC)

Note: For simplicity each UGB is referred to by its primary city's name.

The smaller UGBs—La Pine and Sisters—are expected to grow by a combined number of over 4,200 persons from 2018 to 2043 and more than 5,550 persons from 2043 to 2068 (**Figure 17**). Similar to the larger UGBs and Deschutes County as a whole, population growth rates are forecast to slow for the second half of the forecast period (2043 to 2068).

Figure 17. Deschutes County and Smaller Sub-Areas—Forecast Population and AAGR

	2018	2043	2068	AAGR (2018-2043)	AAGR (2043-2068)	Share of County 2018	Share of County 2043	Share of County 2068
Deschutes County	*187,621*	*301,999*	*432,930*	*1.9%*	*1.5%*	--	--	--
La Pine	1,833	3,594	5,894	*2.7%*	*2.0%*	1.0%	1.2%	1.4%
Sisters	2,691	5,169	8,431	*2.6%*	*2.0%*	1.4%	1.7%	1.9%
Outside UGBs	62,360	79,248	80,739	*1.0%*	*0.1%*	33.2%	26.2%	18.6%

Source: Forecast by Population Research Center (PRC)

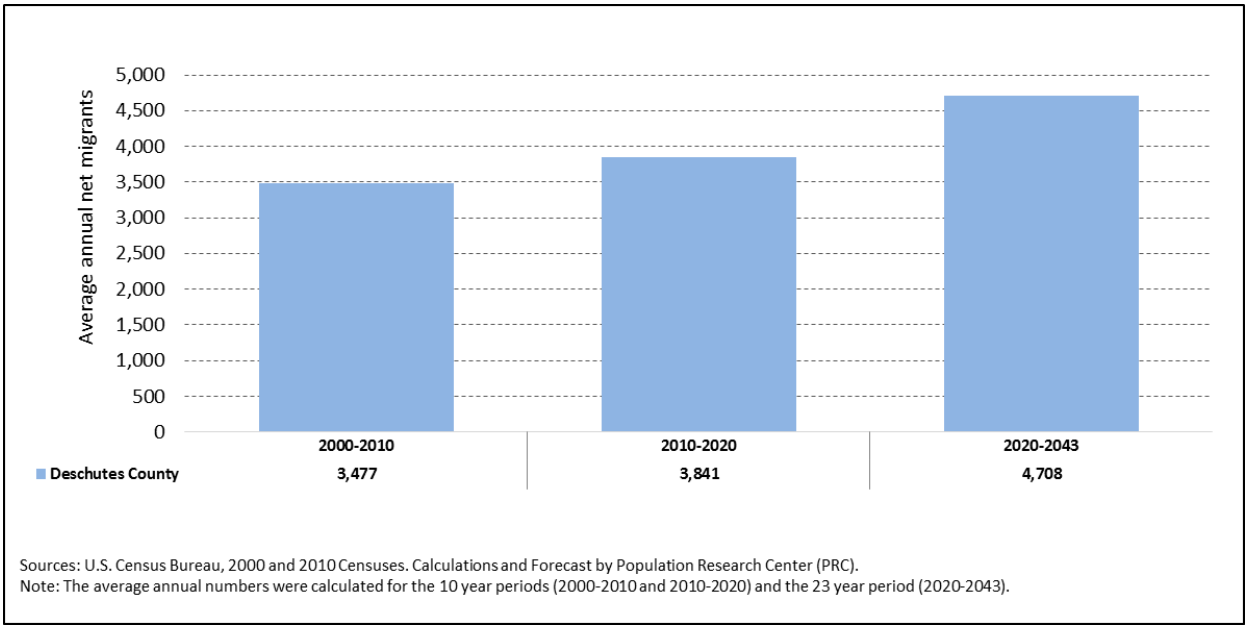
Note: For simplicity each UGB is referred to by its primary city's name.

Population outside the UGBs is expected to grow by roughly 17,000 people from 2018 to 2043, but this growth is expected to slow during the second half of the forecast period to an increase of less than 1,500 people from 2043 to 2068. The population of the area outside UGBs is forecast to capture a decreasing share of countywide population growth over the forecast period, composing about 33 percent of the countywide population in 2018 and only slightly under 19 percent in 2068.

Forecast Trends in Components of Population Change

As previously discussed, the number of in-migrants is forecasted to outweigh the number of out-migrants in Deschutes County, creating a positive net in-migration of new residents that is expected to persist throughout the forecast period. Furthermore, the annual net in-migration is forecasted to increase from the near-term rate of 3,841 individuals from 2010-2020 to 4,708 individuals from 2020-2043 (**Figure 18**).

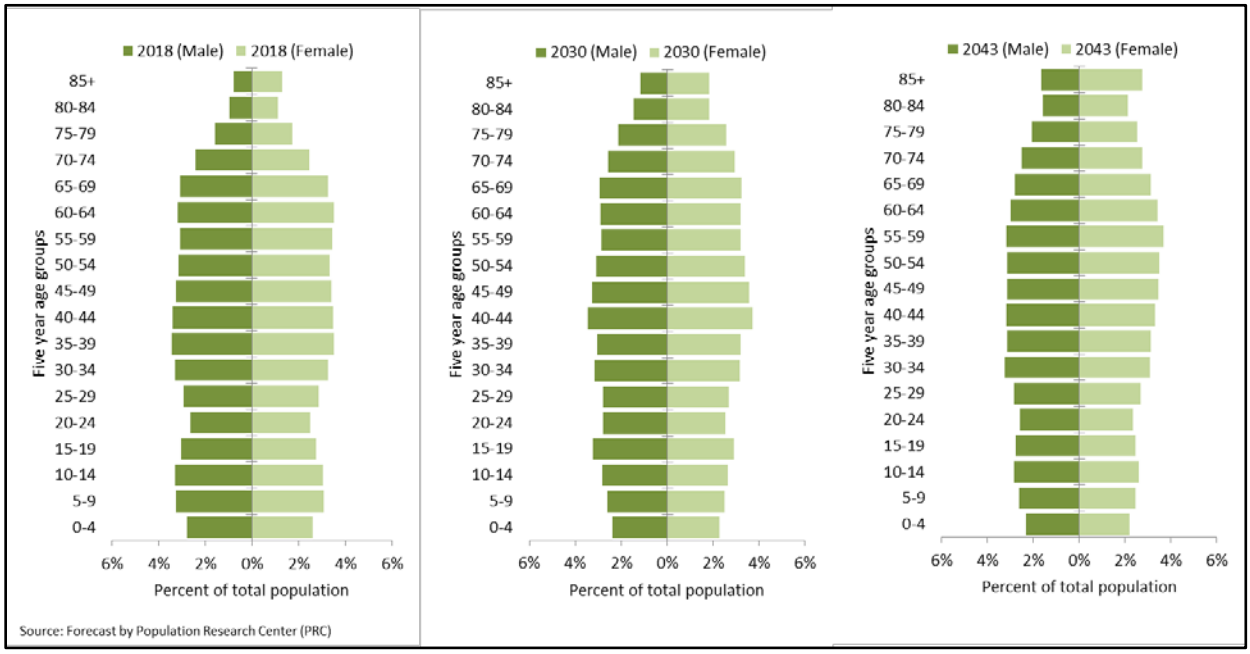
Figure 18. Deschutes County—Average Annual Net In/Out-Migration (2000-2010, 2010-2020, and 2020-2043)



Sources: U.S. Census Bureau, 2000 and 2010 Censuses. Calculations and Forecast by Population Research Center (PRC).
Note: The average annual numbers were calculated for the 10 year periods (2000-2010 and 2010-2020) and the 23 year period (2020-2043).

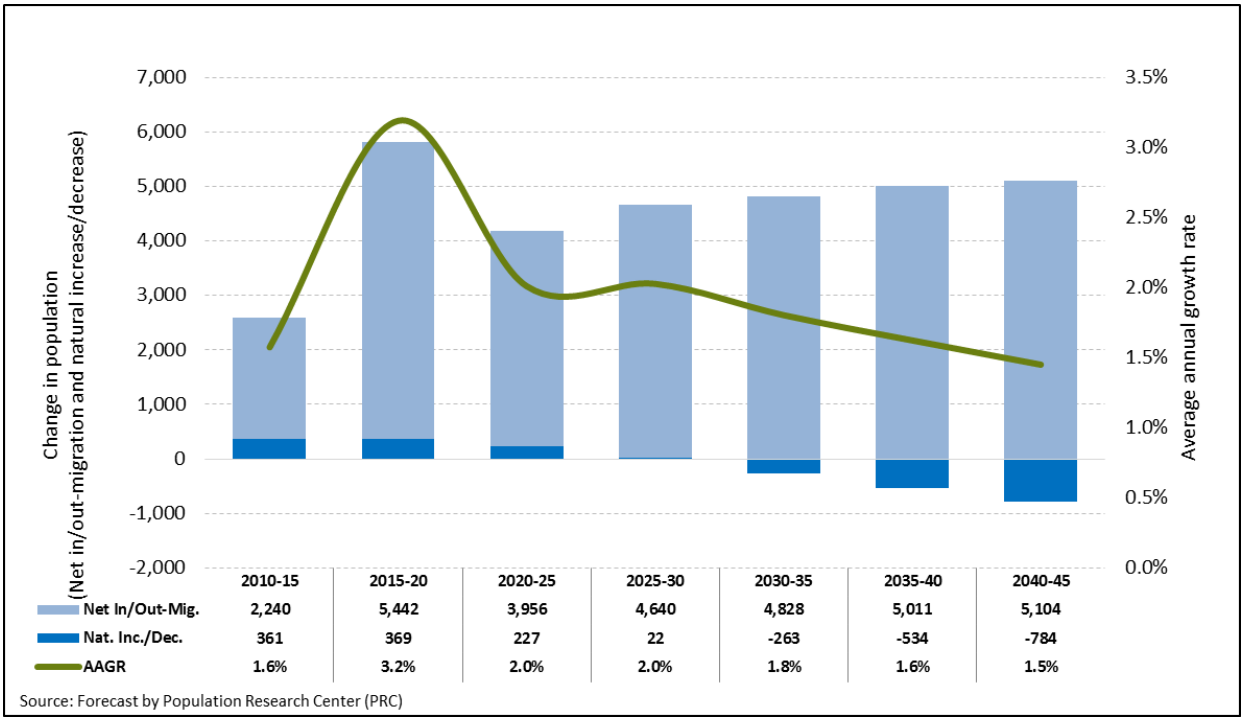
In addition to net in-migration, the other key component shaping Deschutes County's forecasted population is the aging population. From 2018 to 2030, the proportion of the county population 65 years of age or older is forecast to grow from roughly 18.5 percent to 22.6 percent, and then to maintain that proportion through 2043 (**Figure 19**). For a more detailed look at the age structure of Deschutes County's population, see the final forecast table published to the forecast program website (www.pdx.edu/prc/cycle-2-region-1-documents).

Figure 19. Deschutes County—Age Structure of the Population (2018, 2030, and 2043)



In summary, current population growth is expected to peak in 2020, because the average annual growth rate begins to decline due to a shrinking natural increase and increasing population base (**Figure 20**). Net in-migration is expected to steadily increase throughout the forecast period and therefore offset the natural decrease that Deschutes is forecasted to experience starting in the 2030-2035 period.

Figure 20. Deschutes County—Components of Population Change (2015-2045)



Glossary of Key Terms

Cohort-Component Method: A method used to forecast future populations based on changes in births, deaths, and migration over time.

Coordinated population forecast: A population forecast prepared for the county along with population forecasts for its urban growth boundary (UGB) areas and non-UGB area.

Housing unit: A house, apartment, mobile home or trailer, group of rooms, or single room that is occupied or is intended for occupancy.

Housing-Unit Method: A method used to forecast future populations based on changes in housing unit counts, vacancy rates, the average numbers of persons per household (PPH), and group quarter population counts.

Occupancy rate: The proportion of total housing units that are occupied by an individual or group of persons.

Persons per household (PPH): The average household size (i.e. the average number of persons per occupied housing unit).

Replacement Level Fertility: The average number of children each woman needs to bear in order to replace the population (to replace each male and female) under current mortality conditions in the U.S. This is commonly estimated to be 2.1 children per woman.

Appendix A: Surveys and Supporting Information

Supporting information is based on planning documents and reports, and from submissions to PRC from city officials and staff, and other stakeholders. The information pertains to characteristics of each city area, and to changes thought to occur in the future. The city of Redmond did not submit a survey response.

General Survey for Oregon Population Forecast Program	
Jurisdiction: City of Bend, Oregon	Date: November 13, 2017
Observations about Population Composition (e.g. children, the elderly, racial and ethnic groups)	Bend's population has grown either faster or slower than the 2015 Population Forecast, depending on which set of estimates are used to compare. Using PSU's from 2014-2016, Bend's population grew by 3,515 people, or 4%. Using the Census Bureau's estimates for Bend's population from 2014 – 2016 shows Bend's population grew by 7,106 people, or 8%. The American Community Survey (ACS) data for Bend shows the Hispanic and Latino population has continued to grow. Between the 2000 Census and the 2010 Census, the Hispanic and Latino proportion of the population increased from 4.6% to 8.2%. From 2010 to 2016, it grew from representing 8% of Bend's households to 9%. (See Attachment 1). Household size has remained relatively stable at around 2.4 persons per household. The proportion of households where the householder was between 45 and 54 years of age has seen the greatest increase.
Observations about Housing	Since the last forecast survey in 2014, Bend has seen a significant increase in the development of housing. Attached data from the City's building permit records shows a greater proportion of new units permitted in 2015 and 2016 were multi-family attached housing. For calendar year 2017 (January through September), more single family dwellings were permitted than in the previous two years. (See Attachment 2 for building permit data on new units permitted from 2014 through 2017.) Attachment 3 is table that lists the multi-family developments in Bend, and their stage of development (e.g. under review, under construction). Bend adopted a 2016 Housing Needs Analysis that was part of the factual basis to support a 2,380-acre expansion of the Bend urban

	growth boundary (UGB). This expansion included another 1,142 acres of land for housing, and between the land in the current UGB and in the expansion areas, has land planned and zoned so that 55% of future housing can be single family detached, 10% will single family attached, and 35% will be multi-family attached. The UGB expansion areas have capacity for 5,282 units of housing, in the mix described above.
Planned Housing Dev./Est. Year Completion (for detailed information submissions please use the Housing Development Survey)	See Housing Development Survey (attached) Explanation of codes and comments: 1. Within five years – The City does not ask when an approved application for development will be completed or occupied. Our local experience is that most of the applications approved are developed within five years. 2. Active – application is still under review 3. Approved – application was approved. 4. Pre-app – application has had a pre-application conference, but no final application has been submitted yet. 5. N/A – data unavailable.
Planned future construction of Group Quarters facilities	The data collected for the annual Housing Unit and Population Questionnaire (2017) showed an increase in the number of group quarters facilities that are either assisted living or memory care. Oregon State University-Cascades Campus as expanded to a new location in Bend on Chandler Avenue, and become a full four – year university. It has housing on-site for 330 students. They are preparing but have not released a master plan for expansion of the university that would include additional on-site student housing. Central Oregon Community College has expanded its on-site housing capacity to 300 students.
Future Employers Locating to the Area	The following summarizes new employers locating in the area and existing employers expanding their operation (See Attachment 4 - Biz News at www.qualityinfo.org). Fred Meyer is working to establish a second store in Bend at the north end and serve as an anchor tenant for additional large national retailers. Robal Road Retail Village is opening this fall at the north end of Bend at Robal Road and Highway 97. Its tenants

	include a Cracker Barrel restaurant, a retail location for Ulta Beauty products (national retailer), and a Black Rock Coffee Bar. Bend has a Makers District in which several small manufacturers are located and growing, including Oregon Spirit Distilleries. Worthy Brewing is scheduled to open a downtown Bend location, and is planning to double is production in 2017-2018 with new fermenters, tanks and other upgrades. In addition, two new liquor stores are scheduled to open in Bend. Tourism is still a strong component of Bend's economy. A new 105-room Residence Inn is scheduled to open in the Old Mill District. A 120-room Peppertree Best Western Premier hotel will open in Bend in summer of 2018 Ibex Global, a call center in Bend that employs about 500 people, plans to double this year. The City adopted a 2016 Economic Opportunities Analysis and used this as part of the factual base to support a 2,380-acre expansion of the Bend UGB. This expansion included an additional 815 acres of land for employment, including an estimated 7,181 jobs. Of note, Deschutes County was tied for fastest growth in gross domestic product in 2016 (See Attachment 5 - article from www.qualityinfo.org).
Capacity and condition of infrastructure to accommodate growth.	The City has adopted and acknowledged public facility plans (See Statewide Planning Goal 11), for the City's water, sewer collection and treatment, and transportation systems. The water public facility plan (PFP) was adopted and acknowledged in 2013. The City recently completed a replacement of the water intake and treatment facility at Bridge Creek to support the City's water supply. https://www.bendoregon.gov/city-projects/city-infrastructure-projects/recently-completed-projects/water-filtration-facility. The City also completed the replacement of pipelines from Bridge Creek to the Water Filtration Facility. https://www.bendoregon.gov/city-projects/city-infrastructure-projects/recently-completed-projects/bridge-creek-pipeline-replacement-project.

	The sewer collection PFP was adopted and acknowledged in 2014. The City has been at work constructing new sewer collection lines and interceptors to provide capacity to unsewered areas in the Bend UGB and in the UGB expansion areas. This includes the Southeast Interceptor, which is scheduled to be completed in two years. https://www.bendoregon.gov/city-projects/city-infrastructure-projects/se-interceptor-project. The City is also working to complete an expansion of the wastewater treatment plant on McGrath Road. The WRF project is 85% complete as of the date of this survey. In 2017, the City began work to develop a new transportation system plan to replace the plan acknowledged in 2013. This plan would include the transportation planning necessary to support the land uses planned for in the UGB Expansion Areas.
Any Promotions (promos) and Hindrances (hinders) to Population Growth; Other notes	Promos: • Strong population growth since 2010 Census • Strong employment growth, low unemployment rate • City has adopted infrastructure improvement plans and currently has several large construction projects in process (e.g. Southeast sewer interceptor line) • OSU-Cascades has transitioned to a four (4) year university • Growth in employment is occurring outside of construction, retail, and leisure and hospitality sectors to include more tech, personal services, and specialty manufacturing. Hinders: • Housing costs are high – costs for homes to purchase and rents are high • Employers are facing difficulties in finding new staff to fill new or unfilled positions • City is catching up with infrastructure projects. This may delay new construction of housing and commercial buildings in areas that are waiting for sewer collection and/or transportation improvements to proceed.

Do you have a buildable lands inventory for your area/UGB? If yes, it would be helpful if you could please share it with our center in GIS format.	Yes. The City adopted a BLI in 2016 with its 2016 UGB expansion. A separate zip folder with the GIS shapefiles is enclosed.
Highlights or summary from planning documents and studies on influences and anticipation of population and housing growth (including any plans for UGB expansion and the stage in the expansion process)	In November 2016, the Department of Land Conservation and Development approved a 2,380-acre expansion of the Bend UGB. This expansion included ten areas in the UGB and provided additional capacity for 5,282 housing units and 7,181 jobs. A package of amendments to the Bend Comprehensive Plan were adopted to support this UGB expansion. These amendments included a 2016 housing needs analysis and a 2016 economic opportunities analysis. These documents informed the work presented in a 2016 Urbanization Report that also documented the need for land through a UGB expansion, and the process through which the areas ultimately included were evaluated and selected. The Bend Comprehensive Plan is available online: https://www.bendoregon.gov/government/departments/growth-management/long-range-planning/-folder-1088. Bend relied on the 2004 County Coordinated Population Forecast for Bend in this work. The coordinated forecast for Bend in 2025 was 109,389 people. The City extended the 2004 coordinated forecast to 115,063 for the year 2028 (the UGB horizon) year, and also used this population forecast to develop a housing unit forecast of 16,681 new units needed by 2028. The Coordinated Population Forecast for Bend in 2025 was very close to PSU's forecast for Bend in 2025. The coordinated forecast was 109,389; the PSU forecast was 109,546. The difference between these forecasts is 157 people or 0.14%.

General Survey for Oregon Population Forecast Program

Jurisdiction: City of La Pine	Date: 1/18/2018
Observations about Population Composition (e.g. children, the elderly, racial and ethnic groups)	Continued trend of retirees, influx of families with more affordable (relative to Deschutes County) being built. No changes in racial/ethnic groups, vast majority caucasian continues trend.
Observations about Housing	Very large spike in housing. 47 dwellings units in 2017. Anticipate perhaps 100 in 2018 between single-family homes and a 42-unit multi-family complex being built. Potential for 50+ single-family homes per year estimate to continue for a few years based on developer conversations, land they own, market absorption, etc.
Planned Housing Dev./Est. Year Completion (for detailed information submissions please use the Housing Development Survey)	
Planned future construction of Group Quarters facilities	
Future Employers Locating to the Area	Potential large industrial user (approximately 25 employees) working hard to attract other traded-sector businesses. Growth in commercial as well. St. Charles Medical Clinic will be opening in a few months.
Capacity and condition of infrastructure to accommodate growth.	$25 million water/waster projects are fully funded based on 20-year master plans, engineering in 2018, construction in 2019 and completion in 2020.
Any Promotions (promos) and Hindrances (hinders) to Population Growth; Other notes	Not that we are aware of at this time.
Do you have a buildable lands inventory for your area/UGB? If yes, it would be helpful if you could please share it with our center in GIS format.	Not yet, hopefully working on in the coming years.
Highlights or summary from planning documents and studies on influences and anticipation of population and housing growth (including any plans for UGB expansion and the stage in the expansion process)	We have a 40-year land supply . . . the city limits and the UGB are the same. We have 500+ acres ready for residential and hundreds of acres in the industrial park.

General Survey for Oregon Population Forecast Program	
Jurisdiction: Sisters	Date: 01/03/2018
Observations about Population Composition (e.g. children, the elderly, racial and ethnic groups)	
Observations about Housing	Housing development is booming, and demand is very high. We expect roughly 150 housing units to be built out next year.
Planned Housing Dev./Est. Year Completion	See Buildable Lands Inventory: Sisters has just under 1,400 developed units and roughly has another 900 units in the pipeline. Most of the 900 housing units should be built over the next 10-15 years, barring the next great recession. They may be constructed in 10 years or less if the construction labor improves.
Future Group Quarters Facilities	
Future Employers	
Infrastructure	
Promotions (promos) and Hindrances (hinders) to Population Growth; Other notes	
Highlights or summary from planning documents and studies on influences and anticipation of population and housing growth.	

Appendix B: Specific Assumptions

Bend

We assume total fertility rates will follow a historical trend (observed from the 2000 to 2010 period) and gradually decline over the forecast period. We assume forecasted trends in survival rates to be the same as those for the county as a whole; these rates are expected to increase slightly for the 65+ population over the 25 year horizon. Age specific net migration rates are generally in line with county patterns.

La Pine

We assume the 5-year average annual housing unit growth rate to taper throughout the forecast period. We assume the occupancy rate and persons per household (PPH) to be steady at 74.1% percent and 2.3 for the 25-year horizon, respectively. We assume the group quarters population to remain at 47.

Redmond

We assume total fertility rates will follow a historical trend (observed from the 2000 to 2010 period) and gradually decline over the forecast period. We assume forecasted trends in survival rates to be the same as those for the county as a whole; these rates are expected to increase slightly for the 65+ population over the 25 year horizon. Age specific net migration rates are generally in line with county patterns.

Sisters

We assume the 5-year average annual housing unit growth rate to taper throughout the forecast period. We assume the occupancy rate and persons per household (PPH) to be steady at 76.4% percent and 2.4 for the 25-year horizon, respectively. We assume the group quarters population to remain at 10.

Outside UGBs

We assume total fertility rates will follow a historical trend (observed from the 2000 to 2010 period) and gradually decline over the forecast period. We assume forecasted trends in survival rates to be the same as those for the county as a whole; these rates are expected to increase slightly for the 65+ population over the 25 year horizon. Age specific net migration rates deviate from county patterns; we assume the sub-area will continue to experience a net out-migration of college-age individuals.

Appendix C: Detailed Population Forecast Results

Figure 21. Deschutes County—Population by Five-Year Age Group

Population Forecasts by Age Group / Year	2018	2020	2025	2030	2035	2040	2043
00-04	10,070	9,839	10,421	11,339	12,216	13,176	13,669
05-09	11,852	12,824	11,588	12,475	13,620	14,673	15,338
10-14	11,849	12,486	14,535	13,354	14,425	15,749	16,451
15-19	10,852	11,443	12,640	14,993	13,828	14,938	15,726
20-24	9,597	10,396	11,498	12,941	15,411	14,214	14,868
25-29	10,838	11,236	12,973	13,418	14,895	17,430	16,586
30-34	12,291	13,318	13,324	15,369	15,815	17,407	19,107
35-39	13,003	13,939	15,680	15,276	17,525	17,874	18,910
40-44	12,882	13,836	15,459	17,531	16,991	19,315	19,519
45-49	12,478	13,203	14,794	16,672	18,977	18,394	19,839
50-54	12,150	12,616	13,848	15,795	17,867	20,337	19,937
55-59	12,200	12,623	13,222	14,768	16,906	19,129	20,650
60-64	12,550	12,996	13,761	14,906	16,141	18,156	19,320
65-69	11,851	12,979	13,772	15,108	15,866	16,875	17,890
70-74	9,137	10,226	12,534	13,382	14,612	15,346	15,904
75-79	6,205	7,162	9,238	11,471	12,336	13,455	13,836
80-84	3,945	4,362	6,089	7,982	9,886	10,641	11,192
85+	3,871	4,307	5,332	7,240	9,521	12,114	13,258
Total	**187,621**	**199,793**	**220,708**	**244,018**	**266,840**	**289,225**	**301,999**

Figure 22. Deschutes County's Sub-Areas—Total Population

Area / Year	2018	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2068
Deschutes County	187,621	199,793	220,708	244,018	266,840	289,225	310,827	334,042	358,991	385,803	414,618	432,930
Bend UGB	91,373	98,205	109,338	123,574	138,587	153,696	168,364	184,754	203,718	222,590	242,149	255,291
La Pine UGB	1,833	2,081	2,304	2,670	3,023	3,386	3,739	4,145	4,625	5,091	5,568	5,894
Redmond UGB	29,364	30,812	33,839	38,524	43,473	48,575	53,750	59,179	65,515	71,765	78,213	82,575
Sisters UGB	2,691	3,018	3,340	3,889	4,384	4,867	5,380	5,954	6,631	7,291	7,968	8,431
Outside UGB Area	62,360	65,677	71,887	75,362	77,373	78,702	79,593	80,010	78,501	79,067	80,719	80,739